

# Using Home Oxygen Safely: What Everyone Needs to Know

*When a Private Health Problem  
Becomes a Public Safety Threat*



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# Objectives

- Increase awareness of this public safety issue
- Target patients and families
- Convey our message of concern
- A consistent message throughout the state
- Teach safe or less dangerous practices



# How Do We Address the Problem?

- Multi-disciplinary approach
- No one agency owns the problem
- Fire, physicians, tobacco control, housing authority, medical gas supplier and elder service workers are all involved in these high risk situations
- Patients and families



# Launched Educational Campaign in 2010

- Targeted to:
  - Patients
  - Families
  - Doctors
  - Caregivers
  - Therapists
  - Hospital discharge social workers
  - Firefighters/EMTs



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# Home Oxygen a Growing Phenomenon

- Booming elder population
- Shorter hospital stays
- Outpatient procedures and home health services
- Leads to long term oxygen treatment (LTOT)



# Public Safety Threat

- If you have a home, family, and/ or friends, you should be aware of home oxygen use and best practices!
  - Smoking on home O2 moves the behavior from being a private health issue to a public safety issue.
  - Now involves the community.



# The Massachusetts Fire Problem

- Since 1997, O2 has been involved in:
  - 40 fire deaths
  - 93 serious injuries
  - 7 firefighter injuries
  - 121 identifiable incidents
- In 2017 alone, there were 6 severe incidents involving O2 (all involved smoking)
- In 2018 (to date) there were 2 incidents with 1 death and 1 injury

*\* based on fire and burn reports received by the Fire Data and Public Education Unit*



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# Older Adults at Greatest Risk for Fire Death

- Nationally, older adults and children under 5 at greatest risk for fire deaths
- In MA, older adults (people 65+) were 29% of 2016 fire deaths
- Down from 24% in 2015.





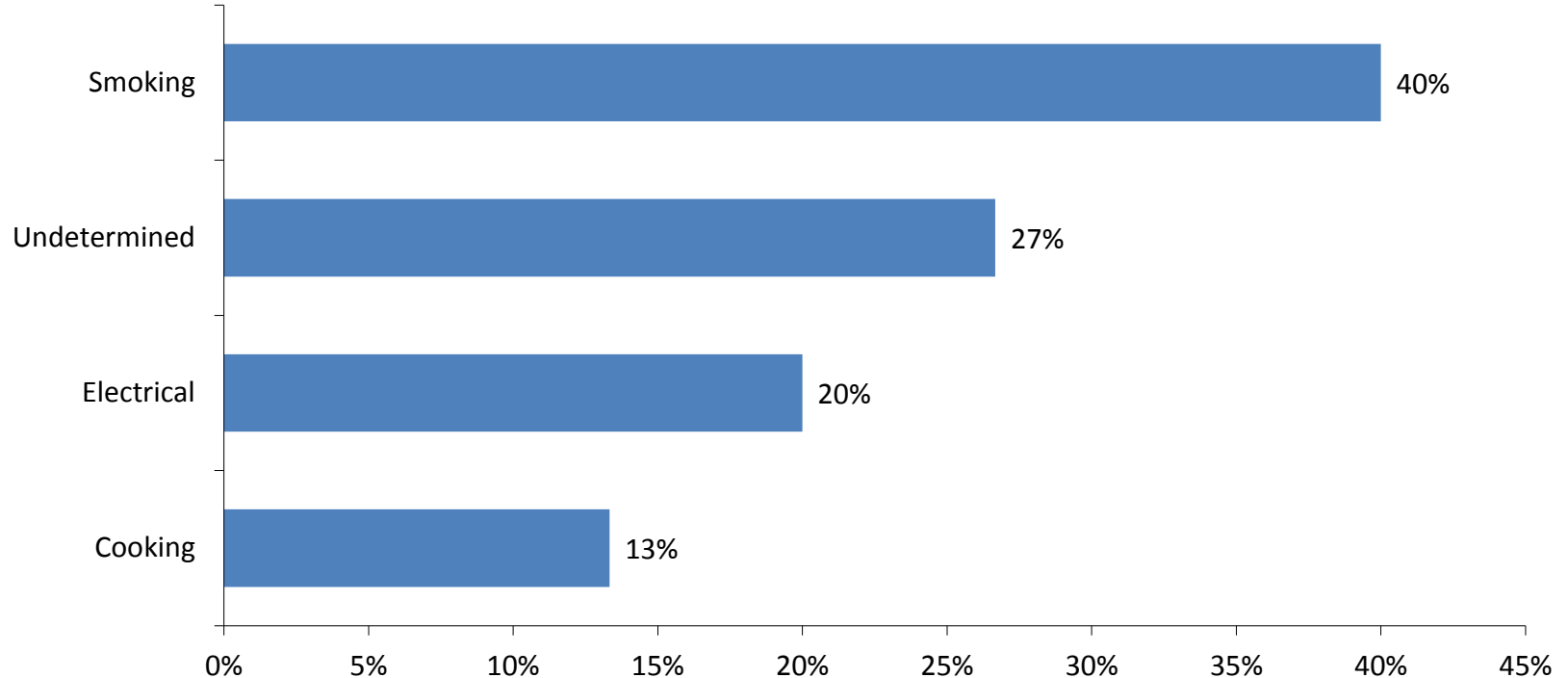
# Smoking Leading Cause of Fire Deaths

- Smoking remains the leading cause of fire
- deaths:
  - Nationally
  - In MA for older adults (40%)



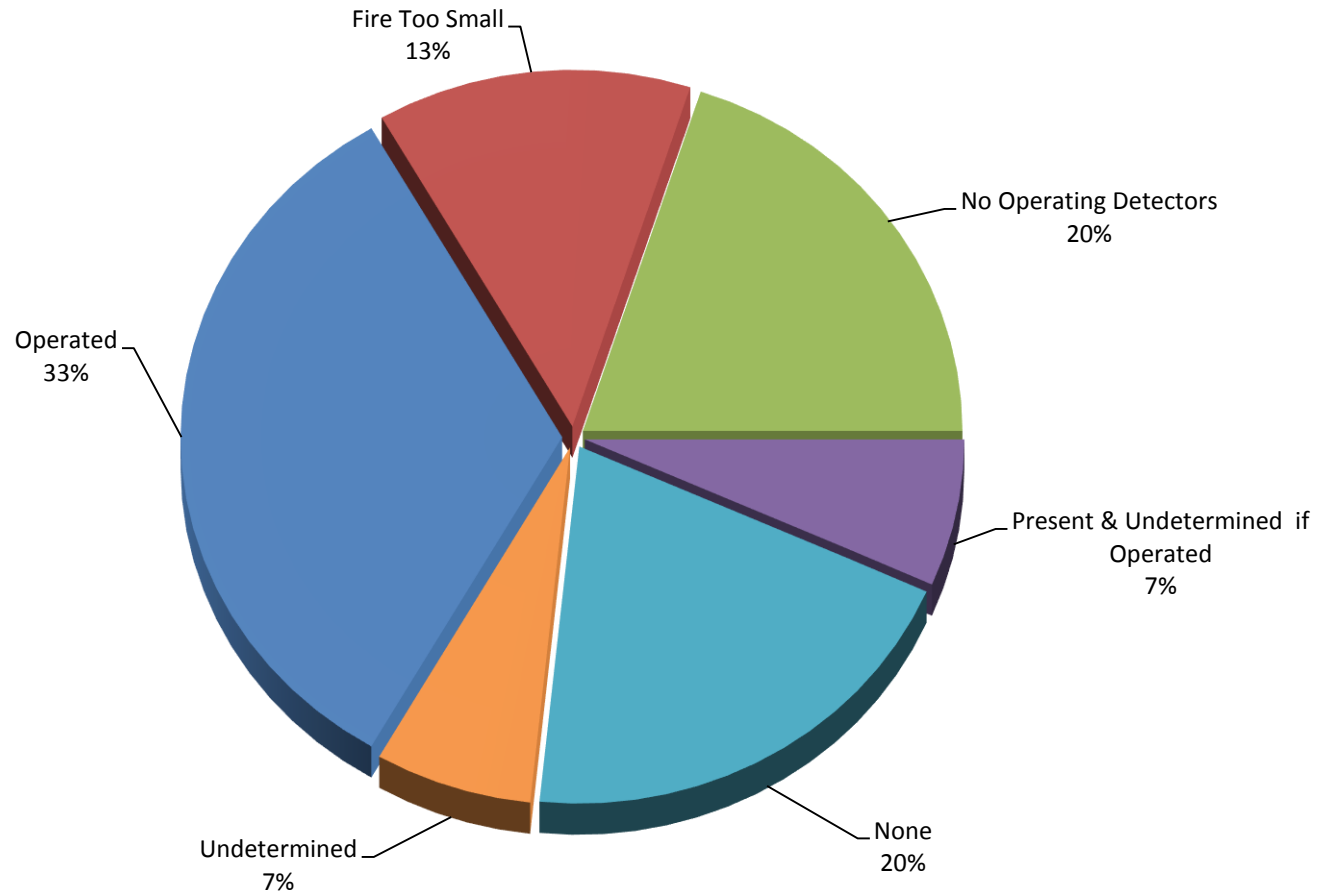
# 2016 Causes of Senior Fire Deaths

## *2016 Causes of Senior Fire Deaths in MA Residential Fires*



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# ***Smoke Alarm Performance & Senior Fire Deaths in 2016***



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# What We Want

- We want:
  - smokers to keep themselves and their families safe;
  - to protect other people living in the building from fire;
  - to protect firefighters;
  - to preserve housing;
  - to save pets;
  - save a lifetime of possessions.



# Winthrop Housing Authority

- Friday, October 13, 2000, 5:45 a.m.
- 57-year old woman on home O2 – lit cigarette
- Did not alert other tenants after fire started - found on a bench smoking
- 3 people injured



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# Winthrop: 3 Alarm Fire

- Danger to firefighters:
  - Empty O2 canisters not removed.
- Fortunately:
  - Fire doors were closed - prevented spread of fire to attached building
- In the end:
  - 16 units of elder housing lost in 1 building
  - 90 seniors evacuated
  - Over \$551k in fire, smoke & water damage
  - 1 year to rebuild; rebuilt with sprinklers



“A day I will never forget.”

“My phone rang and a firefighter informed me that one of the Winthrop Housing Authority buildings was on fire.”

*Comments from Alice Hayes,  
Director of Winthrop  
Housing Authority*



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- A resident, on oxygen, decided she wanted a cigarette. She lit her cigarette, slid the mask over and BOOM, the mask area ignited, traveled through the hose to the machine--- and exploded.”





# Plymouth Senior Housing

- August 4, 2006, 11:45p.m.
- Victim on home O2 & smoking
- 1 FF injury (broken wrist); several treated for smoke inhalation
- \$500k in damages
- 15 people displaced
- No sprinklers

*Non-fatal – but look at the destruction!*



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# Plymouth Senior Housing

- Room of Origin



# Plymouth Senior Housing

- Room of Origin





# Room of Origin



O2 Cylinders



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# Room of Origin – O2 Tubing



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# Plymouth Senior Housing

Cigarettes

O2 Tubing



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# What Home Oxygen Should Look Like...



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# What Home Oxygen Should NOT Look Like



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# Fatal Fires

- Lunenburg – May 2008
- Hadley Inn – Nov. 2008
- Fitchburg – Aug. 2009
- Quincy – Dec. 2009
- Lynn – February 2010
- Worcester – February 2010
- Springfield – Oct. 2010
- New Bedford – Jan. 2011
- Taunton- June 2011
- Haverhill – March 2012
- Westfield – February 2013
- Chelsea – October 2016
- West Springfield – Nov. 2017
- Quincy – February 2017
- Haverhill – February 2017
- Andover – March 2018



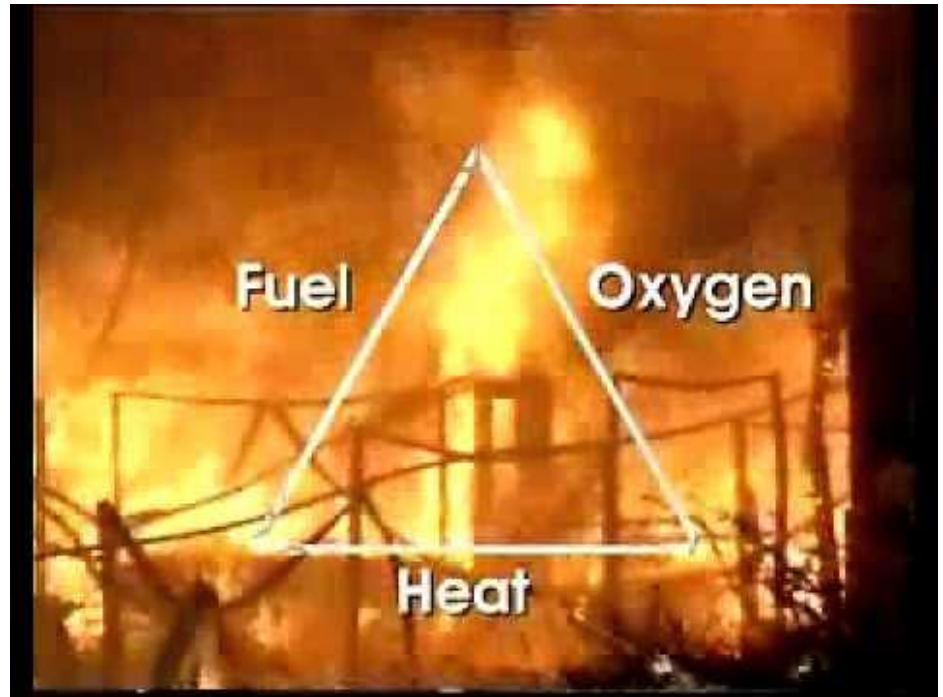
# Victim is Not Always the Smoker

- Quincy, February 11, 2017
- 67-yr old woman on home O2 started the fire by smoking
- 19-yr old grandson who lived with her was trapped by the fire



# Oxygen & Fire Safety

- Lowers the energy required to ignite materials
- More air (O<sub>2</sub>), makes the fire spread faster



# Facts about Oxygen

- Exists as a gas at room temperature
- Stored in a liquid state at very low temp (-300 F.)
- Non-flammable – does not burn or catch fire
- Oxidizer
  - Supports combustion
  - Lowers the energy required to ignite materials
  - Flame retardant materials can burn in an enriched oxygen atmosphere



# Oxygen Saturates

- O2 soaks into furniture, clothes, bedding, rugs, drapes
- O2 soaks into hair, beards
- O2 leaks into home's "atmosphere"
- Creates oxygen-enriched environment
  - (25% O2 or more)
- Lowers temperature these things can first ignite
- Spreads a fire more quickly



# Home O2 Rules To Live By

- Avoid oil-based products
- Oils, grease & petroleum products can catch fire when exposed to high O2 concentrations
- Avoid oil-based lotions, lip balms, petroleum jelly, or aerosol sprays



# Home O2 Rules To Live By (cont.)

- Keep 10 Feet from possible ignition sources:
  - **Smoking materials** – cigarettes, matches, lighters
  - **Small appliances** – electric razors, hair dryers
  - **Pilot lights** – in appliances, stoves, water heaters
  - **Heating sources** – furnaces, space heaters, woodstoves, electric blankets
  - **Cooking**
  - **Candles**
  - **DO NOT** allow occupants to smoke in homes where medical O2 is being used. Encourage occupants to quit or to smoke outside.



# Fire Safety in the Home

- For everyone but crucial for those with home O2 systems
- Working smoke alarms every level and outside bedrooms
- Consider extra smoke alarms inside bedrooms
- Escape Plan
  - 2 Ways Out & Meeting Place
- Keep phone by bed or chair
- Keep exit pathways clear





# No Smoking in the Home

- By:
  - LTOT patient
  - Family members
  - Visitors
  - Caregivers
  - ANYONE



- ~ Signs should be posted
- ~ Encourage patient to get help quitting
- ~ Don't enable



# Until the Smoker Quits

- Shut off the O2
- Wait 10 minutes
- Go outside to smoke
- Allows O2 to dissipate from hair and clothes
- Not safe, but safer
- No guarantees



# Think About Quitting

- Patients should ask Dr. about help
  - Many new medicines make quitting easier
- Doctors should make cessation referral before prescribing home O2
- E-Cigarettes can pose a threat of fire. This is not a good substitution for smoking cigarettes
- Free telephone counseling & referral
  - MA Smokers' Helpline 1-800-Try-To-Stop
  - [www.trytostop.org](http://www.trytostop.org)
- American Cancer Society [www.cancer.org](http://www.cancer.org)  
1-800-227-2345
- American Lung Association [www.lungusa.org](http://www.lungusa.org)



# Firefighter Safety Issue

- Firefighters often unaware of O2 presence
  - Post sign Oxygen in Use
  - Notify E-911
- Fire less predictable when fueled by O2
- Flashover can occur sooner
- Cylinders can explode - danger of shrapnel
- Protective gear at greater risk



# Firefighter Safety Issue (cont.)

- Fire retardant materials can burn in oxygen enriched environments
- Nomex, a common fire retardant material used in firefighter's protective gear, burns vigorously in a 31% oxygen atmosphere



# Home Oxygen Safety

- Home oxygen safety campaign developed with partners: medical oxygen suppliers, physicians, MDPH, visiting nurses, and more.
- Public awareness campaign on radio and TV
- Hand off program for FDs, PPT training program, sample press release, educational pamphlet and posters.
- Collaboration with community partners key.



# DFS Home O2 Campaign Components

- Printed pamphlet available at the [Massachusetts Public Health Clearinghouse](#)
- Poster
- Firefighter Education Guidelines
- Website – [www.mass.gov/dfs](http://www.mass.gov/dfs) and type in the search bar “Home Oxygen Safety”
- TV PSAs



# Medical Equipment Suppliers

- See this first-hand every day
- By law, can't just stop delivering O2 when see evidence of smoking
- Can't force residents to post no smoking O2 signs
- HIPPA also restricts whom they can contact
- Anyone can make referrals to Elders at Risk
- Thousands of installations – many short-term





# Elders At Risk / Elder Abuse

- A man's home is his castle
- Goal is to keep elders in own homes as long as possible
- When is an elder no longer able to care for themselves at home and an elder at risk?
- What if someone else is doing the smoking? Or smoking on O2?
- Mandated reporters must report self-neglect and abuse



# Landlords

- Issues:
  - Nobody wants to force sick, elderly people out onto the street
  - Leases usually do have clauses about posing a threat to other tenants
  - Effective leverage in getting patients to get help quitting smoking or face eviction
  - Eviction means little to terminally ill



# What Landlords Can Do

- Housing authorities develop policies that tenant smoking is grounds for eviction
- Progressive action – warnings, proof of cessation, etc. can stop action
- Has proven most effective
- Install sprinklers
- Use federal FIRE Act grant funds
- Join New Smoke-Free Building Registry



# What the Fire Department Can Do

- Express concern 1st and foremost
- Ask residents to alert E-911 about O2 so you can help them in a power outage
- Promote greater general awareness using educational tools
- As part of multi-disciplinary approach, the FD can educate patient and family using Education Guidelines developed by DFS
- Develop protocol on when to ask to educate and when to refer to another agency (FD = mandated reporter)



# Resources

- U.S. Fire Administration
  - [www.usfa.dhs.gov/](http://www.usfa.dhs.gov/)
  - Special Report on Fires Involving Medical Oxygen Equipment, March 1999  
<https://www.usfa.fema.gov/downloads/pdf/publications/tr-107.pdf>
  - Smoking and Home Fires campaign  
<https://www.usfa.fema.gov/prevention/outreach/smoking.html>
  - Fire Safety for People 50 Plus campaign  
[https://www.usfa.fema.gov/prevention/outreach/older\\_adults.html](https://www.usfa.fema.gov/prevention/outreach/older_adults.html)



# More Resources

- National Fire Protection Association
  - [www.nfpa.org](http://www.nfpa.org)
  - *Fires & Burns Involving Home Medical Oxygen, M. Ahrens, August 2008.*
  - *Remembering When: A Fall & Fire Prevention Program for Older Adults*



# Studies

MMWR – April 23, 2008

***Fatalities from Fires Resulting From Smoking during Oxygen Therapy – Maine, Massachusetts, New Hampshire and Oklahoma, 2000-2007, A. Pelletier, Maine Department of Public Health***



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# In Summary



## Home Oxygen “Rule of 10”:

- Keep 10 feet away from all ignition sources
  - ex: electric appliances, candles, stoves, heaters
- Occupants of O<sub>2</sub> enriched environments **MUST** wait 10 minutes & go outside before smoking
  - Allows saturated clothing and hair to return to “normal” O<sub>2</sub> levels



# For More Information

## Contact:

- Department of Fire Services  
Fire Data and Public Education Unit  
P.O. Box 1025  
State Road  
Stow, MA 01775  
978-567-3380
- [www.mass.gov/dfs](http://www.mass.gov/dfs) click on “Fire Safety Topics” and “Home Oxygen Safety”

